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SEX DIFFERENCES IN RISK OF PTSD

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The aim of this review is to discuss sex differences in rates of posttraumatic stress disorder (PTSD). This topic was the subject of a recent meta-analysis by Tolin and Foa (2006) that reviewed 25 years of research. Overall, research suggests that women are approximately twice as likely as are men to meet criteria for PTSD (e.g., Breslau et al., 1998; Kessler et al., 1995), and are over four times as likely to have chronic PTSD (Breslau & Davis, 1992). In this review, we will discuss several potential explanations for this discrepancy raised in the literature, including differences in risk of overall or specific traumas, methodological issues, and the possibility of sex-specific expressions of emotional distress.

Risk of Traumatic Events

One factor considered by Tolin and Foa (2006) is that women might be more likely to be traumatized than are men, and thus the elevated risk of PTSD in women might be due to an overall higher risk of trauma. However, this does not appear to be the case. In fact, epidemiological studies (e.g., Breslau et al., 1998; Norris et al., 2003) show the opposite: when "trauma" is considered as a unitary category, women are approximately one-third less likely to report experiencing a trauma than are men. Therefore, the higher rate of PTSD among women cannot be explained by a greater overall risk of trauma.

Perhaps the critical issue is not whether women are more likely to experience trauma than are men, but rather whether women are more likely to experience certain types of trauma, particularly sexual abuse and assault that are associated with a high probability of PTSD. Across studies, women appear more likely than men to report these kinds of traumas (Boney-McCoy & Finkelhor, 1996; Breslau, Chilcoat, Kessler, Peterson, & Lucia, 1999; Norris, 1992; Perkonig et al., 2000). Men, on the other hand, are more likely to report experiencing a range of other traumas, including non-sexual assault, serious accidents, combat, and witnessing death or injury (Breslau, Chilcoat, Kessler, Peterson, & Lucia, 1999; Kessler et al., 1995; Norris et al., 2003; Perkonig et al., 2000; Tolin & Foa, 2006). The overall higher rate of trauma in men, therefore, appears to be due to a higher risk of non-sexual traumatic events,

whereas women are more likely to report sexual traumas.

Differences in PTSD Prevalence Controlling for Event Type

Could the twofold risk of PTSD among women be due to the higher risk of sexual traumas? Across studies, among victims of adult sexual assault, a small number of studies revealed no significant difference in rates of PTSD between men and women; however, among both adults and children who reported child sexual abuse, women and girls remained approximately twice as likely to meet criteria for PTSD as were men and boys. However, sex comparisons of PTSD across traumatic events that are more commonly endorsed by men (non-sexual assault, accidents, combat, disaster or fire, witnessing death or injury) also show that women who reported these traumas were more likely to meet criteria for PTSD than were men who reported the same types of traumas (Tolin & Foa, 2006). These results suggest that the higher prevalence of PTSD among women cannot be attributed to a higher risk of sexual traumas. Rather, the higher risk of PTSD for female participants seems to cut across trauma categories.

Other Issues to Consider

If the greater risk of PTSD among women cannot be explained by the higher risk of sexual traumas, what else might explain it? One possibility is how a "trauma" is defined. With the release of DSM-IV in 1994, the PTSD diagnosis requires that the index trauma meet two criteria: (A1) the event involves real or perceived threat of death or serious injury, or threat to the physical integrity of self or others; and (A2) the person's response includes intense fear, helplessness, or horror. Some might argue that the subjective element of defining an event as "traumatic" partly on the basis of the individual's cognitive and emotional response during and after the event can be misleading, obscuring sex differences in exposure and in the conditional probability of PTSD (Breslau & Kessler, 2001). Alternatively, it could be argued that one's peritraumatic cognitive, emotional, and behavioral reactions might in fact be a critical determinant of the subsequent development of fearful reactions (Clark & Ehlers, 2004), and therefore helps explain why most individuals who experience such events recover, and only a minority go on to develop PTSD. Three epidemiological studies (Breslau & Kessler, 2001; Norris et al., 2003; Perkonig et al., 2000) in

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which the prevalence of trauma with and without Criterion A2 (extreme fear) was examined within the same samples found that the requirement of a reported fear response decreased male participants' reported trauma frequency, thus reducing the obtained sex difference. However, when Tolin and Foa (2006) looked across all studies, the addition of DSM-IV Criteria A1 and A2 did not appear to diminish male participants' reports of trauma. Thus, the impact of Criteria A1 and A2 on sex-specific reports of trauma remains unclear.

An important limitation of most studies of sex differences in PTSD is that they assess participants only after the traumatic event has occurred, without taking into account differences in base rates of psychological distress (e.g., depressive and anxiety disorders). It is well established that even at a young age, girls display greater levels of negative affectivity than do boys (McCrae et al., 2002), and by adolescence and adulthood, anxiety and depression are approximately twice as prevalent among girls and women (Kessler et al., 1994). Thus, it might be argued that had they not been traumatized, the participants would still have exhibited sex differences in psychiatric symptoms and disorders. The use of nontraumatized control samples would help address this issue. An example of this design comes from Boney-McCoy and Finkelhor (1996), who assessed PTSD symptoms among male and female assault survivors, as well as among non-assaulted male and female participants. Results of that study suggested a greater risk of PTSD for women following nonsexual assault, but a somewhat greater risk of PTSD for men following sexual assault. In epidemiological research, reported pre-trauma history of anxiety and depressive disorders was associated with an increased likelihood of PTSD following an index event, although sex differences in PTSD remained even after controlling for pre-trauma psychiatric status (Breslau et al., 1997).

Another concern is that the labels commonly used to describe traumatic events might mean different things when applied to men and women. What does it mean, for example, to indicate that a participant has experienced a "nonsexual assault," "child sexual abuse," or "combat?" Female nonsexual assault victims are more likely than male participants to be assaulted by a family member or intimate partner (Singer et al., 1995), and sustain more serious injury as a result of such violence (Cascardi et al., 1992). Among participants reporting child sexual abuse, male participants are more likely than are female participants to report the use of physical force or threats during the abuse (Finkelhor et al., 1990), but female participants are more likely to report multiple incidents of abuse, and to have been abused by a close family member (Fischer, 1992). Male victims of adult sexual assault may be more likely than their female counterparts to have been assaulted by multiple perpetrators, to have been attacked multiple times, and to have been physically beaten during the sexual assault (Kaufman et al., 1980). Male combat veterans have greater exposure to violent events than do female combat veterans, even in more recent conflicts (Litz et al., 1997). The list goes on. Thus, it is clear that using monolithic descriptors of traumatic events risks obscuring important sex-specific differences in victims' experiences which could influence the risk of developing PTSD.

Craske (2003) has written at length about possible biological, psychological, and social reasons for the increased risk of anxiety disorders (including PTSD) among women; Kimerling et al. (2002) have similarly investigated possible contributors to sex differences in PTSD. One possible explanation is that men are more likely to respond to trauma with emotional and behavioral symptoms that do not match the diagnostic criteria for PTSD. In the National Comorbidity Survey Replication (Kessler et al., 2005), compared to female participants, male participants were less likely to report "internalizing" disorders (e.g., anxiety, depression), and were more likely to report "externalizing" disorders (e.g., conduct disorders, substance use disorders). Investigations of post-trauma symptoms follow a similar pattern, with male participants reporting higher rates of substance use and aggressive behavior (Darves-Bornoz et al., 1998; Green et al., 1997). It is possible that gender-role expectations are more supportive or tolerant of certain symptoms in women vs. men. Belligerent or aggressive behavior might be considered more acceptable responses to trauma for men and boys, whereas anxious or depressed behavior might be considered more acceptable for women and girls. The experience of a trauma may exacerbate pre-existing socially-influenced gender differences in response to distress, resulting in different posttraumatic symptom patterns.

Men and women might respond to trauma differently in terms of their immediate peritraumatic and posttraumatic cognitions and behaviors. Compared to male trauma survivors, female trauma survivors endorsed more self-blame for the event, greater belief that they were incompetent or damaged, and greater belief that the world is dangerous (Tolin & Foa, 2002). Women may be more likely than their male counterparts to report using coping strategies such as wishful thinking, mental disengagement, and suppression of trauma memories, strategies that correlate positively with severity of PTSD symptoms (Clohessy & Ehlers, 1999).

Sex may also be confounded in some cases with other contextual risk factors for the development of PTSD. Across studies, low socioeconomic status and history of childhood adversity are associated with a moderately higher risk of PTSD following a traumatic event (Brewin et al., 2000), although the magnitude of effect is probably not sufficient to explain all of the observed sex differences in PTSD.

Finally, the cumulative effects of repeated traumatization must be taken into account. It might be argued that women are more likely than men to experience multiple traumas across the lifespan, which may increase their risk of developing PTSD (Follette et al., 1996). The presence of prior traumas, particularly assaultive violence, appears to increase the risk of PTSD following an index event (Breslau, Chilcoat, Kessler, & Davis, 1999). Similarly, stressful or uncontrollable life events subsequent to the index event also appear to increase the risk of chronicity (Brewin et al., 2000). However, the increased risk of PTSD among women does not change when controlling for prior traumatic events or history of preexisting depression or anxiety (Breslau et al., 1997).

Conclusions

Although it is clear that women are much more likely than men to meet criteria for PTSD, the reasons for this difference are far from clear. It does not appear to be due to a higher risk of trauma, and although women are more likely than men to experience sexual traumas, this alone does not appear to account for the difference. More research is needed before strong conclusions can be reached regarding how sex acts as a vulnerability or resilience factor. Methodological improvements, such as defining traumatic events more clearly and taking into account base rates of psychopathology and pre-index trauma history, would likely facilitate greater understanding. Furthermore, it would be helpful for future researchers to examine in greater detail the role of sex and gender in the likelihood and effect of cumulative traumas, cognitive and behavioral response to traumatic events, and the possible differential expression of posttraumatic distress, whether or not such expression fits the diagnostic criteria for PTSD.

SELECTED ABSTRACTS

BONEY-MCCOY, S., & FINKELHOR, D. (1996). **Is youth victimization related to trauma symptoms and depression after controlling for prior symptoms and family relationships? A longitudinal, prospective study.** *Journal of Consulting and Clinical Psychology*, 64, 1406-1416. The common finding linking symptoms such as PTSD and depression with youth victimization (e.g., sexual abuse) might well be artifactual if preexisting psychopathology or disturbed family relationships create a common risk for both later victimization and later symptoms. This study used a longitudinal, prospective design to examine this issue. In a national random sample telephone survey, children 10 to 16 years old were interviewed and then reinterviewed approximately 15 months later about psychological problems, family relationships and victimization experiences that had occurred in the interim. Victimization in the interim was associated with PTSD-related symptoms and depression measured at Time 2, even after controlling for these symptoms and the quality of the parent-child relationship at Time 1. The association was particularly strong for sexual abuse, parental assault, and kidnapping experiences. However, these data also suggest that some of the apparent association found in cross-sectional studies between victimization and psychopathology may be due to prior psychopathology (but not parent-child relationship problems), which puts children at risk for both victimization and later symptoms.

BRESLAU, N., CHILCOAT, H.D., KESSLER, R.C., & DAVIS, G.C. (1999). **Previous exposure to trauma and PTSD effects of subsequent trauma: Results from the Detroit Area Survey of Trauma.** *American Journal of Psychiatry*, 156, 902-907. *Objective:* With the exception of a few reports of higher rates of childhood trauma in Vietnam veterans with PTSD, little is known about the influence of previous exposure to trauma on the PTSD effects of subsequent trauma. The authors examine interrelated questions about the effects of previous exposure to trauma. *Method:* A representative sample of 2,181 individuals in southeast Michigan [the 1996 Detroit Area Survey of Trauma] were interviewed by telephone to record lifetime history of traumatic events specified in DSM-IV as potentially

leading to PTSD. PTSD was assessed with respect to randomly selected index trauma from the list of events reported by each respondent. *Results:* History of any previous exposure to traumatic events was associated with a greater risk of PTSD from the index trauma. Multiple previous events had a stronger effect than a single previous event. The effect of previous assaultive violence persisted over time with little change. When they examined several features of the previous exposure to trauma, the authors found that subjects who experienced multiple events involving assaultive violence in childhood were more likely to experience PTSD from trauma in adulthood. Furthermore, previous events involving assaultive violence—single or multiple, in childhood or later on—were associated with a higher risk of PTSD in adulthood. *Conclusions:* Previous exposure to trauma signals a greater risk of PTSD from subsequent trauma. Although these results are consistent with a sensitization hypothesis, like the results from previous research on PTSD, they do not address the mechanism of increased responsiveness to trauma. Long-term observational studies can further elucidate these observations.

BRESLAU, N., CHILCOAT, H.D., KESSLER, R.C., PETERSON, E.L., & LUCIA, V.C. (1999). **Vulnerability to assaultive violence: Further specification of the sex difference in post-traumatic stress disorder.** *Psychological Medicine*, 29, 813-821. *Background:* We examine potential sources of the sex differences in PTSD in the community. *Methods:* Data were obtained from a representative sample [1996 Detroit Area Survey of Trauma] of 2181 persons aged 18-45 years in the Detroit primary metropolitan statistical area, which is a six-county area containing more than four million residents. A random digit dialling method was used to select the sample and a computer-assisted telephone interview was used to obtain the data. DSM-IV PTSD was assessed with respect to a randomly selected trauma from the list of qualifying traumas reported by each respondent. *Results:* The lifetime prevalence of exposure and the mean number of traumas were lower in females than males. The overall conditional risk of PTSD (i.e., the probability of PTSD among those exposed to a trauma) was approximately twofold higher in females than males, adjusting for the sex difference in the distribution of trauma types. The sex difference was due primarily to females' greater risk following assaultive violence. The sex difference in the avoidance and numbing symptom group following assaultive violence exceeded the sex differences in other symptom groups. *Conclusions:* Future research should focus on sex differences in the response to assaultive violence, including potential explanations for females' greater probability to experience avoidance and numbing.

BRESLAU, N., & DAVIS, G.C. (1992). **Posttraumatic stress disorder in an urban population of young adults: Risk factors for chronicity.** *American Journal of Psychiatry*, 149, 671-675. *Objective:* Despite progress in epidemiologic research on PTSD, little is known about factors that distinguish chronic from nonchronic PTSD. In a previous report, the authors identified a set of personal predispositions associated with PTSD following traumatic events in a general population sample of young adults. The purpose of this analysis was to identify characteristics of chronic PTSD and examine whether any of the suspected risk factors for PTSD was associated specifically with chronic PTSD. *Method:* A random sample of 1,007 21- to 30-year-old members of a large health maintenance organization in the Detroit area was interviewed, using the National

Institute of Mental Health Diagnostic Interview Schedule (DIS), revised for DSM-III-R. The analysis was performed on data from 394 respondents who reported traumatic events, of whom 93 met criteria for PTSD. Chronic PTSD was defined as duration of symptoms for 1 year or more. *Results:* Persons with chronic PTSD ($N = 53$) had, on the average, a significantly higher total number of PTSD symptoms and higher rates of overreactivity to stimuli that symbolized the stressor and interpersonal numbing than persons with nonchronic PTSD. The rates of one or more additional anxiety or affective disorders and a variety of medical conditions were higher in persons with chronic than nonchronic PTSD. Family history of antisocial behavior and female sex were associated specifically with chronic PTSD. *Conclusions:* The findings suggest that chronic PTSD may be associated with specific risk factors and clinical features. Longitudinal data on the course of PTSD are needed to determine whether the distinct features and the medical and psychiatric histories of persons with chronic PTSD are complications attendant on a chronic course or co-existing disturbances that inhibit recovery.

BRESLAU, N., DAVIS, G.C., ANDRESKI, P., PETERSON, E.L., & SCHULTZ, L.R. (1997). **Sex differences in posttraumatic stress disorder.** *Archives of General Psychiatry*, 54, 1044-1048. *Background:* Epidemiologic surveys in the general population documented a higher rate of PTSD in women than in men. To date, the finding has received little scientific attention. This study examines the extent to which sex differences in PTSD might be explained by previously identified risk factors and whether the sex difference in PTSD varied by age at exposure to traumatic events. *Methods:* The NIMH-DIS (NIMH Diagnostic Interview Schedule, Version III Revised) was used to measure DSM-III-R disorders in a random sample of 1007 young adults. Cox proportional hazards models were used to estimate changes in the hazards ratio for PTSD associated with sex when potential risk factors were included. *Results:* Lifetime prevalence of exposure to traumatic events and number of traumatic events did not vary by sex. The prevalence of PTSD was higher for women than for men exposed to traumatic events (hazards ratio, 2.3; 95% confidence interval, 1.5-3.6). Preexisting anxiety disorders or major depressive disorders played a part in the observed sex difference in PTSD. Family history of anxiety disorder and early separation from parents, although significant risk factors for PTSD in subjects of both sexes, were unrelated to the sex difference in PTSD. The sex difference in PTSD was markedly greater if exposure occurred in childhood than later on. *Conclusions:* PTSD is more likely to develop in females than in males after exposure to a traumatic event. Susceptibility to PTSD in females might be greater in childhood than after age 15 years. Explanations of the sex difference might involve characteristics of individuals and of the traumatic experiences.

BRESLAU, N., & KESSLER, R.C. (2001). **The stressor criterion in DSM-IV posttraumatic stress disorder: An empirical investigation.** *Biological Psychiatry*, 50, 699-704. *Background:* The DSM-IV two-part definition of posttraumatic stress disorder (PTSD) widened the variety of stressors (A1) and added a subjective component (A2). The effects of the revised stressor criterion on estimates of exposure and PTSD in a community sample are evaluated. *Methods:* A representative sample of 2181 persons in southeast Michigan were interviewed about lifetime history of traumatic events and PTSD. The evaluation of the revised two-part definition is based on a randomly se-

lected sample of events that represents the total pool of traumatic events experienced in the community. *Results:* The enlarged definition of stressors in A1 increased the total number of events that can be used to diagnose PTSD by 59%. The majority of A1 events (76.6%) involved the emotional response in A2. Females were more likely than males to endorse A2 (adjusted odds ratio = 2.66; 95% confidence interval 1.92, 3.71). Of all PTSD cases resulting from the representative sample of events, 38% were attributable to the expansion of qualifying events in A1. The identification of exposures that lead to PTSD were not improved materially by A2; however, events that did not involve A2 rarely resulted in PTSD. *Conclusions:* Compared to previous definitions, the wider variety of stressors in A1 markedly increased the number of events experienced in the community that can be used to diagnose PTSD. Furthermore, A2 might be useful as a separate criterion, an acute response necessary for the emergence of PTSD, and might serve as an early screen for identifying a subset of recently exposed persons at virtually no risk for PTSD. The utility of A2 as a screen must be tested prospectively.

BRESLAU, N., KESSLER, R.C., CHILCOAT, H.D., SCHULTZ, L.R., DAVIS, G.C., & ANDRESKI, P. (1998). **Trauma and posttraumatic stress disorder in the community: The 1996 Detroit Area Survey of Trauma.** *Archives of General Psychiatry*, 55, 626-632. *Background:* The study estimates the relative importance of specific types of traumas experienced in the community in terms of their prevalence and risk of leading to PTSD. *Methods:* A representative sample of 2,181 persons in the Detroit area aged 18 to 45 years were interviewed by telephone to assess the lifetime history of traumatic events and PTSD, according to DSM-IV. PTSD was assessed with respect to a randomly selected trauma from the list of traumas reported by each respondent, using a modified version of the Diagnostic Interview Schedule, Version IV, and the World Health Organization Composite International Diagnostic Interview. *Results:* The conditional risk of PTSD following exposure to trauma was 9.2%. The highest risk of PTSD was associated with assaultive violence (20.9%). The trauma most often reported as the precipitating event among persons with PTSD (31% of all PTSD cases) was sudden unexpected death of a loved one, an event experienced by 60% of the sample, and with a moderate risk of PTSD (14.3%). Women were at higher risk of PTSD than men, controlling for type of trauma. *Conclusions:* The risk of PTSD associated with a representative sample of traumas is less than previously estimated. Previous studies have overestimated the conditional risk of PTSD by focusing on the worst events the respondents had ever experienced. Although recent research has focused on combat, rape, and other assaultive violence as causes of PTSD, sudden unexpected death of a loved one is a far more important cause of PTSD in the community, accounting for nearly one third of PTSD cases.

BREWIN, C.R., ANDREWS, B., & VALENTINE, J.D. (2000). **Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults.** *Journal of Consulting and Clinical Psychology*, 68, 748-766. Meta-analyses were conducted on 14 separate risk factors for PTSD, and the moderating effects of various sample and study characteristics, including civilian/military status, were examined. Three categories of risk factor emerged: factors such as gender, age at trauma, and race that predicted PTSD in some populations but not in others; factors such as education, previous trauma, and general childhood adversity that predicted PTSD more consistently

but to a varying extent according to the populations studied and the methods used; and factors such as psychiatric history, reported childhood abuse, and family psychiatric history that had more uniform predictive effects. Individually, the effect size of all the risk factors was modest, but factors operating during or after the trauma, such as trauma severity, lack of social support, and additional life stress, had somewhat stronger effects than pretrauma factors.

CRASKE, M.G. (2003). *Origins of phobias and anxiety disorders: Why more women than men?* Oxford: Elsevier. This book presents a critical analysis of the theories and empirical evidence to date regarding the origins of phobias and anxiety disorders, and the reason more women than men suffer from them. The book moves from a discussion of nonspecific temperament to specific risk factors for each anxiety disorder, assuming a hierarchical etiological model throughout. At each level of analysis, the issue of gender differences is addressed. Types of ongoing life experiences that influence the development of one type of anxiety disorder over another are discussed. [from Back Cover]

FOLLETTE, V.M., POLUSNY, M.A., BECHTLE, A.E., & NAUGLE, A.E. (1996). **Cumulative trauma: The impact of child sexual abuse, adult sexual assault, and spouse abuse.** *Journal of Traumatic Stress*, 9, 25-35. The present study investigated the relationship between trauma symptoms and a history of child sexual abuse, adult sexual assault, and physical abuse by a partner as an adult. While there has been some research examining the correlation between individual victimization experiences and traumatic stress, the cumulative impact of multiple victimization experiences has not been addressed. Subjects were recruited from psychological clinics and community advocacy agencies. Additionally, a nonclinical undergraduate student sample was evaluated. The results of this study indicate not only that victimization and revictimization experiences are frequent, but also that the level of trauma specific symptoms are significantly related to the number of different types of reported victimization experiences. The research and clinical implications of these findings are discussed.

KESSLER, R.C., CHIU, W.T., DEMLER, O., & WALTERS, E.E. (2005). **Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication.** *Archives of General Psychiatry*, 62, 617-627. *Background:* Little is known about the general population prevalence or severity of DSM-IV mental disorders. *Objective:* To estimate 12-month prevalence, severity, and comorbidity of DSM-IV anxiety, mood, impulse control, and substance disorders in the recently completed US National Comorbidity Survey Replication. *Design and Setting:* Nationally representative face-to-face household survey conducted between February 2001 and April 2003 using a fully structured diagnostic interview, the World Health Organization World Mental Health Survey Initiative version of the Composite International Diagnostic Interview. *Participants:* Nine thousand two hundred eighty-two English-speaking respondents 18 years and older. *Main Outcome Measures:* Twelve-month DSM-IV disorders. *Results:* Twelve-month prevalence estimates were anxiety, 18.1%; mood, 9.5%; impulse control, 8.9%; substance, 3.8%; and any disorder, 26.2%. Of 12-month cases, 22.3% were classified as serious; 37.3%, moderate; and 40.4%, mild. Fifty-five percent carried only a single diagnosis; 22%, 2 diagnoses; and 23%, 3 or more diagnoses. Latent class analysis detected 7 multivariate disorder classes, including 3 highly comorbid classes

representing 7% of the population. *Conclusion:* Although mental disorders are widespread, serious cases are concentrated among a relatively small proportion of cases with high comorbidity.

KESSLER, R.C., SONNEGA, A., BROMET, E., HUGHES, M., & NELSON, C.B. (1995). **Posttraumatic stress disorder in the National Comorbidity Survey.** *Archives of General Psychiatry*, 52, 1048-1060. *Background:* Data were obtained on the general population epidemiology of DSM-III-R PTSD, including information on estimated lifetime prevalence, the kinds of traumas most often associated with PTSD, sociodemographic correlates, the comorbidity of PTSD with other lifetime psychiatric disorders, and the duration of an index episode. *Methods:* Modified versions of the DSM-III-R PTSD module from the Diagnostic Interview Schedule and of the Composite International Diagnostic Interview were administered to a representative national sample of 5877 persons aged 15 to 54 years in the part II subsample of the National Comorbidity Survey. *Results:* The estimated lifetime prevalence of PTSD is 7.8%. Prevalence is elevated among women and the previously married. The traumas most commonly associated with PTSD are combat exposure and witnessing among men and rape and sexual molestation among women. PTSD is strongly comorbid with other lifetime DSM-III-R disorders. Survival analysis shows that more than one third of people with an index episode of PTSD fail to recover even after many years. *Conclusions:* PTSD is more prevalent than previously believed, and is often persistent. Progress in estimating age-at-onset distributions, cohort effects, and the conditional probabilities of PTSD from different types of trauma will require future epidemiologic studies to assess PTSD for all lifetime traumas rather than for only a small number of retrospectively reported "most serious" traumas.

NORRIS, F.H., MURPHY, A.D., BAKER, C.K., PERILLA, J. L., GUTIÉRREZ RODRIGUEZ, F., & GUTIÉRREZ RODRIGUEZ, J. (2003). **Epidemiology of trauma and posttraumatic stress disorder in Mexico.** *Journal of Abnormal Psychology*, 112, 646-656. Prevalence rates of trauma and PTSD were estimated from a probability sample of 2,509 adults from 4 cities in Mexico. PTSD was assessed according to DSM-IV criteria using the Composite International Diagnostic Interview (CIDI). Lifetime prevalence of exposure and PTSD were 76% and 11.2%, respectively. Risk for PTSD was highest in Oaxaca (the poorest city), persons of lower socioeconomic status, and women. Conditional risk for PTSD was highest following sexual violence, but nonsexual violence and traumatic bereavement had greater overall impact because of their frequency. Of lifetime cases, 62% became chronic; only 42% received medical or professional care. The research demonstrates the importance of expanding the epidemiologic research base on trauma to include developing countries around the world.

PERKONIGG, A., KESSLER, R.C., STORZ, S., & WITTCHEN, H.-U. (2000). **Traumatic events and post-traumatic stress disorder in the community: Prevalence, risk factors and comorbidity.** *Acta Psychiatrica Scandinavica*, 101, 46-59. *Objective:* Lifetime and 12-month prevalence of traumatic events and DSM-IV PTSD as well as risk factors and comorbidity patterns were investigated in a representative community sample (the Early Developmental Stages of Psychopathology Study; n = 3021, aged 14-24 years). *Method:* Traumatic events and PTSD were assessed with the Munich Composite International Diagnostic Interview (CIDI). *Results:* Although 26% of male subjects and 17.7% of female subjects reported at least one traumatic event, only a few quali-

fied for a full PTSD diagnosis (1% of males and 2.2% of females). Traumatic events and PTSD were strongly associated with all other mental disorders examined. PTSD occurred as both a primary and a secondary disorder. *Conclusion:* The prevalence of PTSD in this young German sample is considerably lower than reported in previous US studies. However, the conditional probability for PTSD after experiencing traumas, risk factors and comorbidity patterns [is] quite similar. Traumatic events and full PTSD may increase the risk for other disorders, and vice versa.

TOLIN, D.F., & FOA, E.B. (2002). Gender and PTSD: A cognitive model. In R. Kimerling, P. Ouimette & J. Wolfe (Eds.), *Gender and PTSD* (pp. 76-97). New York: Guilford. Epidemiological studies indicate that males are somewhat more likely than females to experience traumatic events. Despite encountering fewer traumas, however, females appear to be more likely than males to develop PTSD. The purpose of this chapter is to explore hypotheses about cognitive factors that influence gender differences in vulnerability to develop PTSD. We describe a cognitive model of

trauma processing, discuss the potential impact of gender differences on several aspects of the cognitive model, and make recommendations for future research.

TOLIN, D.F., & FOA, E.B. (2006). **Sex differences in trauma and posttraumatic stress disorder: A quantitative review of 25 years of research.** *Psychological Bulletin*, 132, 959-992. Meta-analyses of studies yielding sex-specific risk of potentially traumatic events (PTEs) and PTSD indicated that female participants were more likely than male participants to meet criteria for PTSD, although they were less likely to experience PTEs. Female participants were more likely than male participants to experience sexual assault and child sexual abuse, but less likely to experience accidents, nonsexual assaults, witnessing death or injury, disaster or fire, and combat or war. Among victims of specific PTEs (excluding sexual assault or abuse), female participants exhibited greater PTSD. Thus, sex differences in risk of exposure to particular types of PTE can only partially account for the differential PTSD risk in male and female participants.

CITATIONS

Annotated by the Editor

CASCARDI, M., LANGHINRICHSEN, J., & VIVIAN, D. (1992). **Marital aggression: Impact, injury, and health correlates for husbands and wives.** *Archives of Internal Medicine*, 152, 1178-1184.

The study examined the prevalence and correlates of marital aggression in discordant couples seeking psychological treatment. Overall, 71% of clinic couples reported at least one act of marital aggression during the past year, with wives more likely than husbands to be negatively affected and to sustain severe injuries.

CLARK, D.M., & EHLERS, A. (2004). Posttraumatic stress disorder: From cognitive theory to therapy. In R. L. Leahy (Ed.), *Contemporary cognitive therapy: Theory, research, and practice* (pp. 141-160). New York: Guilford.

Clark and Ehlers outline a cognitive model of PTSD that posits that PTSD develops, in part, because of the person's idiosyncratic appraisals of the traumatic event or its emotional sequelae. In particular, individuals who view the traumatic event as highly threatening, themselves as damaged or incompetent, or the world as a dangerous and unpredictable place, are considered to be at increased risk for developing PTSD.

CLOHESSY, S., & EHLERS, A. (1999). **PTSD symptoms, response to intrusive memories and coping in ambulance service workers.** *British Journal of Clinical Psychology*, 38, 251-265.

Coping strategies for dealing with distressing incidents and responses to intrusive memories were studied in 56 ambulance service workers (13 women). Women were more likely than men to use mental disengagement, venting of emotions, and suppression of intrusions.

DARVES-BORNOZ, J.-M., CHOQUET, M., LEDOUX, S., GASQUET, I., & MANFREDI, R. (1998). **Gender differences in symptoms of adolescents reporting sexual assault.** *Social Psychiatry and Psychiatric Epidemiology*, 33, 111-117.

In a national survey representative of adolescents in France, girls were shown to be more frequently affected by certain symptoms (nightmares, multiple somatic complaints, some items concerning mood disorders), but boys reported more frequent repeated suicide attempts, running away, fits of violence and substance use.

FINKELHOR, D., HOTALING, G., LEWIS, I.A., & SMITH, C. (1990). **Sexual abuse in a national survey of adult men and women: Prevalence, characteristics, and risk factors.** *Child Abuse and Neglect*, 14, 19-28.

In the first national survey of adults that assessed histories of childhood sexual abuse, victimization was reported by 27% of women and 16% of men. The study also examined risk factors for abuse separately for each gender.

FISCHER, G. J. (1992). **Gender differences in college student sexual abuse victims and their offenders.** *Annals of Sex Research*, 5, 215-226.

In a survey of 796 college psychology students, women were more likely to report childhood sexual abuse by a nuclear family member, whereas men were more likely to report abuse by a non-nuclear family member or family friend. The study reported on other sex differences in the characteristics of events and on the consequences of those events.

GREEN, B.L., KRAMER, T.L., GRACE, M.C., GLEESER, G.C., LEONARD, A.C., VARY, M.G., & LINDY, J.D. (1997). Traumatic events over the life span: Survivors of the Buffalo Creek disaster. In T. W. Miller (Ed.), *Clinical disorders and stressful life events* (pp. 283-305). Madison, CT: International Universities Press.

This chapter summarizes the effects of the Buffalo Creek dam collapse and flood on a group of survivors who were studied over a number of years. Gender differences were strong in both adults and children, with women and girls faring more poorly on most measures. An exception was alcohol abuse, which was higher in men.

KAUFMAN, A., DIVASTO, P., JACKSON, R., VOORHEES, D., & CHRISTY, J. (1980). **Male rape victims: Noninstitutionalized assault.** *American Journal of Psychiatry*, 137, 221-223.

Fourteen male rape victims treated in a county hospital emergency room over a 39-month period were compared to 100 randomly selected female victims treated over the same period. The male victims were significantly more likely to have been beaten severely and assaulted multiple times.

KESSLER, R.C., MCGONAGLE, K.A., ZHAO, S., NELSON, C.B., HUGHES, M., ESHLEMAN, S., WITCHEN, H-U., & KENDLER, K.S. (1994). **Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey.** *Archives of General Psychiatry*, 51, 8-19.

In the National Comorbidity Survey, a structured psychiatric interview was administered to a national probability sample in the United States. Women had higher rates of affective disorders and anxiety disorders, whereas men had higher rates of substance use disorders and antisocial personality disorder.

KIMERLING, R., OUIMETTE, P., & WOLFE, J. (Eds.). (2002). *Gender and PTSD*. New York: Guilford Press.

This edited volume addresses gender issues in PTSD across a wide variety of topics including epidemiology, etiology, assessment, diagnosis, treatment, and mental health policy.

LITZ, B.T., ORSILLO, S.M., FRIEDMAN, M., EHLICH, P., & BATRES, A. (1997). **Posttraumatic stress disorder associated with peacekeeping duty in Somalia for U.S. military personnel.** *American Journal of Psychiatry*, 154, 178-184.

The authors examined the prevalence of PTSD associated with exposure to peacekeeping duty in 3,461 active duty personnel (225 women) surveyed 5 months after their return to the United States. Men reported higher exposure to war zone stressors, but women reported feeling more adversely affected by peacekeeping and other stressors. Men and women did not differ in the prevalence of PTSD (7.9% for men and 8.8% for women).

MCCRAE, R.R., COSTA, P.T., Jr., TERRACCIANO, A., PARKER, W.D., MILLS, C.J., DE FRUYT, F., & MERVIELDE, I. (2002). **Personality trait development from age 12 to age 18: Longitudinal, cross-sectional, and cross-cultural analyses.** *Journal of Personality and Social Psychology*, 83, 1456-1468.

Three studies were conducted to assess mean level changes in personality traits during adolescence. Overall, girls scored significantly higher than boys on Neuroticism, Extraversion, Openness to Experience, and Agreeableness. Neuroticism increased over time in girls.

NORRIS, F. H. (1992). **Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups.** *Journal of Consulting and Clinical Psychology*, 60, 409-418.

The frequency and impact of 10 potentially traumatic events were examined in a sample of 1,000 adults (50% women) from four cities in the southeastern United States. Women were more likely than men to have been sexually assaulted over their lives but men were more likely to have been in motor vehicle crashes, to have been physically assaulted, to have served in combat, and to have experienced any potentially traumatic event.

SINGER, M.I., ANGLIN, T.M., SONG, L.Y., & LUNG-HOFER, L. (1995). **Adolescents' exposure to violence and associated symptoms of psychological trauma.** *Journal of the American Medical Association*, 273, 477-482.

Questionnaires were administered to 3,735 high school students (52% female) in six public high schools. Boys from large-city schools, overall, had the greatest levels of exposure to violence, including both direct victimization and witnessing. Girls had greater exposure to violence in the home and to sexual abuse/assault and showed greater levels of trauma symptoms.

NCPTSD NEWS

SUBSCRIBE TO CTU-ONLINE

The Clinician's Trauma Update Online Newsletter (CTU-Online) is published by the Executive Division of the National Center for PTSD. The newsletter, published six times a year, allows clinicians to explore some of the latest, most clinically relevant literature on PTSD.

CTU-Online provides summaries of pertinent articles and links to the fulltext PDF or abstract, along with the ID number used in the PILOTS Database. Articles authored by National Center for PTSD staff are available in full text.

To sign up for this valuable resource and to view a sample newsletter, simply go to www.ncptsd.va.gov and follow the links.

NEW! PTSD 101 COURSES

PTSD 101 is a web-based learning curriculum of 20 online courses, available on the National Center's website (www.ncptsd.va.gov). Each course consists of a slide show in Powerpoint with accompanying audio and transcript.

Veterans and others who suffer from PTSD do not always seek treatment from mental health professionals; often they consult their primary care physicians instead. Therefore PTSD 101 is developed to provide a basic understanding of PTSD. It contains courses such as: "Physical Health Effects of Traumatic Exposure" and "PTSD and Families: Supporting Veterans, Recent Returnees, Active Duty Personnel and Their Families."

Participants can study the materials on their own schedules, and can receive free continuing education credit for the PTSD 101 courses.

PILOTS UPDATE

With more than 32,000 records, the PILOTS Database offers access to a substantial body of research, clinical, and policy studies on PTSD and other sequelae to traumatic events. We have just published two substantial documents that will help users to search the database even more effectively.

The 4th edition of the *PILOTS Database User's Guide* contains a description of the database, defining our criteria for selecting publications to be indexed. It presents suggestions for developing and modifying a search strategy, and explains in some detail the mechanics of searching the database on its new CSA Illumina platform. And it describes the data elements that occur in PILOTS Database records. But all that accounts for only one-tenth of the book.

The bulk of the *User's Guide* is devoted to the PILOTS Thesaurus, the controlled vocabulary of more than 1200 descriptors that we use to characterize the subject-matter and approach of the publications that we index. A brief introduction explains the purpose of a controlled vocabulary, the structure of the PILOTS Thesaurus, and the process by which descriptors are assigned by the PILOTS Database staff. (By understanding this process, database users will be able to design a search strategy that is well suited to retrieving records.) It also explains how to use the Alphabetical Index to the Thesaurus.

The Systematic Table of PILOTS Database Descriptors presents a list of all the descriptors arranged in a format that makes clear the hierarchical relationships among terms. This provides a clear overview of our indexing vocabulary, and suggests ways of broadening or narrowing a subject search.

The Alphabetical Index to the Thesaurus should be the starting-point for most PILOTS Database searches. It lists not only the 1200 descriptors that we use in our indexing, but also several thousand "entry terms" that we use to direct users from words or phrases they might have in mind to the descriptors corresponding to those concepts.

Under each descriptor it lists broader, narrower, and related terms from the Thesaurus, as well as the entry terms for which that descriptor is used. For most descriptors a "scope note" defines the term or explains the way in which it is used in the PILOTS Database.

Three special Term Lists appear at the end of the *User's Guide*. These give standardized names to specific incidents, organizations, and persons that may be the subjects of publications indexed in the database, making it possible to search for literature on a particular person, group, or disaster.

It is also possible to search the PILOTS Database for publications about the development or properties of a specific test or measurement instrument, or for papers reporting work in which a particular instrument was used. Here, too, we have standardized names. Instead of entering all of the names by which an instrument might be known, the database user can simply enter the name shown in the *PILOTS Database Instruments Authority List*. This is far more than just a list of nearly 5000 instruments that psychotrauma researchers and clinicians have used. For each instrument we provide a brief reference to a publication containing or describing it, and in many cases we provide a brief annotation of the test. Because we have obtained most of this information at second hand, we cannot have the confidence in its accuracy that we have in our own bibliographic work. Despite this, we feel that the Instruments Authority List will be helpful to people who are selecting instruments to use in their own work, or who wish to know what instruments have been used in a particular branch of psychotrauma research.

Both the *PILOTS Database User's Guide* and the *PILOTS Database Instruments Authority List* are available at the National Center's website.

User's Guide: http://www.ncptsd.va.gov/ncmain/ncdocs/nc_prod/Users_Guide80912.pdf
Instruments List: http://www.ncptsd.va.gov/ncmain/ncdocs/nc_prod/PILOTS_InstrumentsList_2007.pdf

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